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# FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

## WAMAC WASHINGTON, MARION, and CLINTON COUNTIES



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CITY OF WAMAC

MARION, WASHINGTON, AND CLINTON COUNTIES, ILLINOIS

FLOODPLAIN MANAGEMENT

RECONNAISSANCE STUDY

Prepared By

U.S. Department of Agriculture

Soil Conservation Service

Champaign, Illinois

In cooperation with

STATE OF ILLINOIS

Department of Transportation

Division of Water Resources

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CITY OF WAMAC  
RECONNAISSANCE STUDY

INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flooding problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management," and under Section 6 of Public Law 83-566. A plan of study was executed in October 1983 for reconnaissance studies for 15 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100 year floodplain from flood insurance studies when available. Average annual damages will be estimated for the structures within the floodplain.

This study was conducted and the report provided for the purposes of 1) To evaluate needs for additional future studies, 2) To estimate average annual damages, 3) To provide an updated estimate of the 100 year floodplain and map,



and 4) To provide guidance and recommendations to the community for improved floodplain management.



### STUDY AREA DESCRIPTION

The city of Wamac is located in Marion, Clinton, and Washington Counties. It is located to the south of the city limits of Centralia. The population of Wamac is 1,665, according to the 1980 census.

Transportation facilities within the Wamac area consist of the Missouri-Illinois Railroad, Burlington Northern Railroad, Southern Railroad and the Illinois Central Gulf Railroad. Illinois State Route 161 goes through Centralia and U.S. Route 51 goes north-south through the city. Interstate 64 is approximately 10 miles south of town, and Interstate 57 is approximately 10 miles east of town. The Illinois Central Gulf Railroad has its repair shop and yards in Wamac. Through the use of these facilities, many types of maintenance and repairs are performed for various different rail lines.

Coal mining was a primary industry for the area until the discovery of oil in about 1935. Presently, oil wells are so numerous in the area that they are even found in the parking lots of area stores and shopping centers. Industry in the area has grown considerably in the past few years, especially in the southern portion of Centralia where there was available space.

The main flood water problems to the city of Wamac are caused by runoff from the watershed of Fulton Branch. This stream flows in a general east to west direction, starting 2.5 miles east of Wamac, to its confluence with Sewer Creek, approximately 2 miles west of the city. The total area of this watershed (Fulton Branch) is 5.7 square miles. The drainage is in the Kaskaskia River Basin, hydrologic unit #07140202, Fulton Branch subwatershed #080.





In general, the watershed for Fulton Branch is flat to rolling. Woods and timber border the stream throughout most of its length with the balance being pasture and cultivated fields. Rainfall for the area is normally 35 to 40 inches per year, much of which occurs in the spring months.

Most of the Fulton Branch area is rural in nature with very little, if any, development anticipated in the foreseeable future. Only the upper mile or so of the area has any existing development. This development consists mostly of sparse residential areas and light industry. Additional industry is expected to develop in this vicinity, but the area of expansion appears to be located away from potential flooding.

The soils of the watershed are of the Huey-Cisne or Hoyleton-Bluford series. The Huey-Cisne soils are generally on 0-1% slopes, while the Hoyleton-Bluford are usually on 0-6% slopes. All of these are developed in a loessial cap over glacial till and are somewhat poorly drained with slow to very slow permeability. The upland soils tend to be very wet with no additional water holding capacity in the spring. While Clinton and Washington Counties have soil surveys published from 1933 to 1941, Marion County has a soil survey in progress.

#### Natural Values

The city of Wamac is located in an area of the state that is characterized by an interspersed of land uses. Crop fields are generally moderate in size on the nearly level or gently sloping uplands with scattered pastures, wooded pastures, and ungrazed woods. The steeply sloping areas are nearly always left in timber or pasture. The upland drainageways are mostly tree lined





providing a large amount of varying quality riparian habitat as well as important travel routes for wildlife. The creek floodplains are similar in land use to the upland, but with generally more of the area remaining in timber.

The interspersed land use and associated types of plant communities result in a variety of habitats which support a wide range of plant and animal species. The wide variety of plant and animal species present generally make the area a pleasant place for people to live, work, and play.



## FLOOD PROBLEMS

Flooding along Fulton Branch is generally the result of local, heavy rainfalls and could occur during any part of the year. Due to the usually small amount of snowfall in this area, snowmelt is generally not a contributing factor to flooding. Since most of the flooding is due to heavy local rainfalls over relatively small watersheds, flooding is generally of short durations.

Because of the lack of a good drainage network within the city of Wamac, internal drainage problems and shallow water depressional areas cause much of the damages that exist. Ditches along roads and streets throughout Wamac that used to be 5 or 6 feet deep are now either very shallow or do not exist, due to a combination of sediment deposition and a lack of proper operation and maintenance procedures. A lot of the water that falls on Wamac, does not drain, but instead only ponds, causing a foul smelling health hazard. As little as 3/4 of an inch of rain can cause ponding problems throughout most of the city. This affects most of the basements and most of the central air conditioning systems since most of them are not elevated.

At the present time, the major problem is caused by the lack of drainage than by overbank flooding. Several homes are "rotting away" due to the standing water and high moisture content. To date, approximately 50 homes have undergone extensive rehabilitation through different funds or grants that the city has been able to obtain. Several more have been targeted for rehabilitation if the city can obtain additional funds for this purpose.

The city uses pumps and "lift stations" to handle their sewage. This effort is hindered by surface runoff water entering and overloading the system. The high water table causes many problems and mal-



functions of the pumps. Each "down pump" requires two men working 1/2 a day to repair and replace pumps. It costs the city approximately \$400 each month for the maintenance of pumps.

The city has been investigating options to correct the drainage network. They are looking, along with two other small communities, at a machine that is capable of digging new, or cleaning out old ditches to give them some capacity and depth. Also, the city has hired private consultants to help come up with plans to construct a proper drainage network. A universal problem exists where driveway entrances come off the streets, over the ditches. In most cases, 6 inch culverts are used and many of them are inadequate in size in addition to a lot of them being "squashed."

Within the study area of Fulton Branch, there are approximately 14 bridges and culverts, many of which do not provide adequate openings to transmit floodwater. Most of the Fulton Branch study area is in a rural area with little or no attempt to keep the channels free of brush, trees, and debris. The outlet, Sewer Creek, is also grown up in brush and trees. It is a very shallow ditch that meanders throughout its length.

The sewage treatment plant is located on high ground to the southwest of town. All of the sewage is pumped to this higher elevation from the city. There are several sewage lines that cross Fulton Branch at right angles. Most of these pipes are exposed and at times cause the water course to have overfalls at these locations. Raw sewage has been known to escape, especially during high water or intense rainfall periods, and continue down Fulton





Branch, instead of going to the treatment plant. It is suspected that large volumes of surface runoff water get into the sewer system, through connections with field tile that may be draining "down spouts." An area along Brookside Avenue between 15th and 16th Streets is a major problem because of surface water entering the sewer system.

Water from sump pumps is outletting into low areas and causing standing ponded water that is stale and foul smelling for the neighborhood. Stagnant water from industrial waste discharges is also a potential health hazard. The ponding of water is creating a major mosquito problem.

#### Problem Summary

Estimated average annual damages from floodwaters to the properties listed above are as follows:

Number Homes	Number Garages & Sheds	Businesses	Total Value	Average Annual Damages
23	10	6	\$703,800	\$11,800

Annual damages caused by lack of internal drainage and ponding are as follows:

Approximately 30 additional wet basements:	\$ 4,500
Approximately 20 outside low air conditioning units:	2,000
Seven main ponding areas, affecting a total of 300 residences:	30,000
Street maintenance:	25,000
Pump expense:	4,000
Yard damages:	6,000
Extra expense to spray for mosquitos:	3,000
Extra expense for sewage treatment costs:	<u>5,000</u>

Total Additional Expense \$79,500

Total estimated average annual damages for the city of Wamac equals \$91,300. Flooding starts at the 2-year frequency storm.





### Existing Floodplain Management

Wamac does not participate in the National Flood Insurance Program. Since the city has decided not to participate and regulate new construction, home and business owners do not have the option to purchase flood insurance. There are very few new homes being constructed in the city of Wamac. The last area annexed to the city was for the purpose of trailer courts.



## RECOMMENDATIONS

It is recommended that the city of Wamac participate in the National Flood Insurance Program.

An adequate internal drainage network system should be designed and constructed. This will require at least two separate main drainage lines with "feeders" to the low and ponded areas. The area between Case Street and Brookside Avenue could be drained to an outlet west of Wamac. At a point, approximately 2,200 feet west of Brookside Avenue, this system could outlet into an existing pasture. Lateral lines north of West Seventeenth Street will drain an area of approximately four square blocks.

An alternative plan in the Brookside Avenue and Case Street area would be the use of depressed streets to drain the area. A drainage system utilizing depressed sheets could be planned now and implemented when the potential depressed streets need to be repaired or upgraded. Depressed streets would decrease land rights and maintenance costs, eliminate the need for driveway culverts, decrease the risk of a child falling into a ditch (wet or dry) or a vehicle driving into a ditch, and be more compatible with the existing resources.

The area east of the railroad tracks will also need an open ditch drainage main. This could run parallel to the tracks for 1,400 feet and then go into the existing low area in the middle of the block to outlet below Quince Street. The total length of this main would be approximately 2,300 feet. Lateral lines from the main may also be used to help drain the area east of



the railroad tracks. Since part of this main is close to the railroad tracks, the city would need to check the plans with the Illinois Central Gulf Railroad for exact placement of the drainage main channel.

While a drainage system would eliminate most of the standing and ponded water, it also would help keep surface runoff water out of the existing sewer system. This system, if completed, would require approximately 1.7 miles of "mains" and as many lateral ditches as the city feels it actually needs. Some streets could end up having a ditch on both sides of the street. A major expense for this project will be corrugated metal pipes primarily used for driveway crossings. Pipe on the west side project would need to be a minimum of 24 inches, and a minimum of 18 inches on the east side of the railroad tracks.

The city has discussed purchasing equipment to clean out their ditches. A backhoe would probably be best suited for this work. If the system is constructed, the backhoe will be needed for maintenance on a regular basis. The "dirt" removed during construction probably could be placed around homes to help drainage but must be done correctly to avoid causing additional problems. Detailed soils data are available for decisions on land use from the Salem field office.

The groundwater throughout most of the city is very high. The city should regulate or restrict construction of excavated crawl spaces and one-half or full basements to alleviate and/or prevent potential water related problems.

Waste water from sump pumps should not be outletted into the sanitary sewer system, as it will increase the treatment costs and possibly overload the system.



Provisions should be made to make sure all of the runoff water from the car wash stays in the storm sewer lines. At times, this water has been allowed to run into the existing streams causing pollution and possibly harming the aquatic life.

A low priority should be assigned for future detailed floodplain management studies in Wamac.





### INVESTIGATION AND ANALYSIS

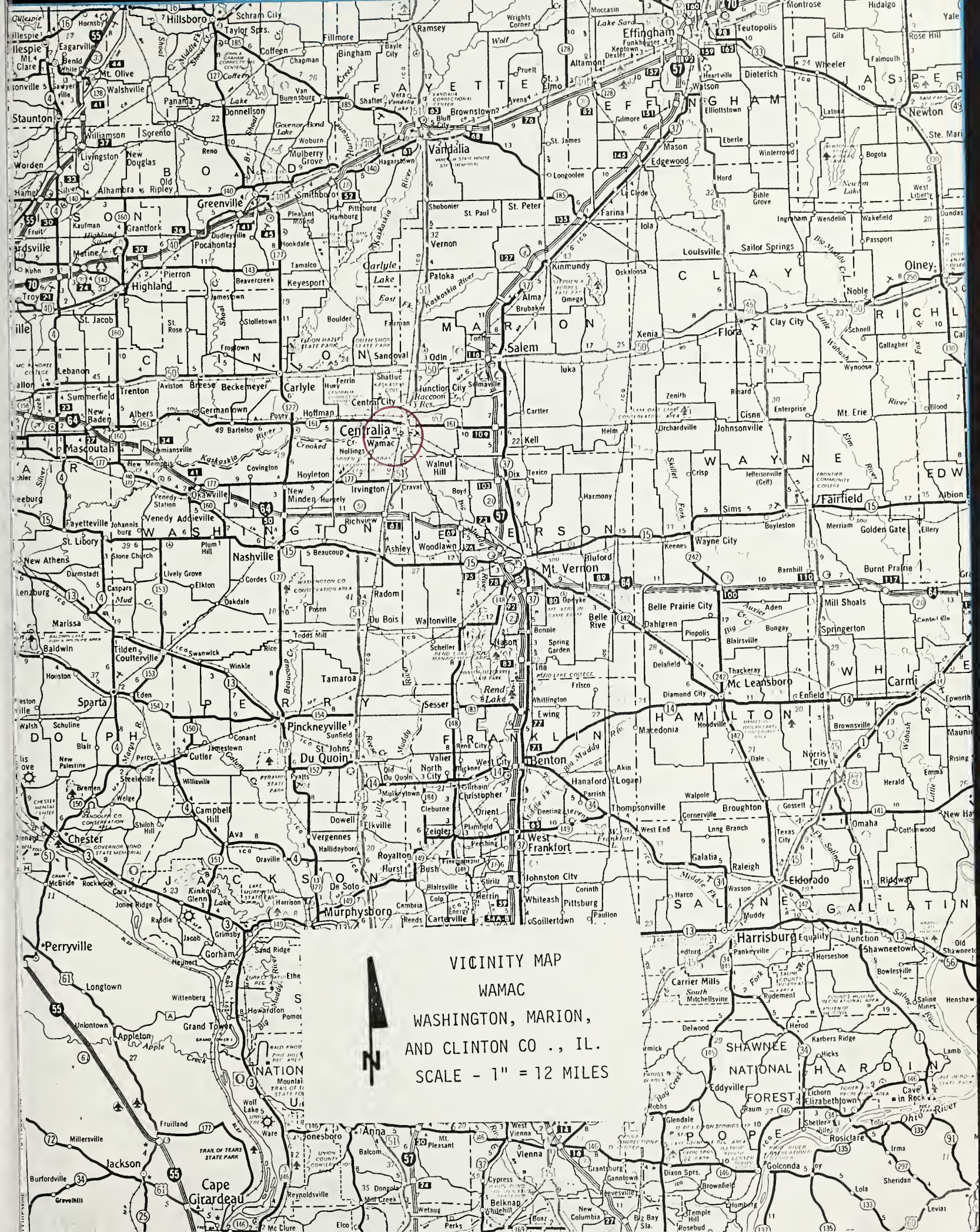
The Corps of Engineers prepared a study, Flood Plain Information, Fulton Branch, Webster Creek and Tributaries, for Wamac in June 1977. Their surveys, cross sections, and 100-year floodplain were used for the basis of this study. The inventory of flooding and water problems is based on a field review and interviews with local citizens. Damages were based on property value estimates during the field review, and the application of damage factors. These factors come from previous floodplain management studies and are based on the frequency and depth of flooding for each property.

Damages caused by ponding and standing water was determined through interviews with city officials, business and home owners.

Aerial photographs were provided by the Division of Water Resources. Minor revisions of the 100-year floodplain were also based on field review and interviews with city officials.



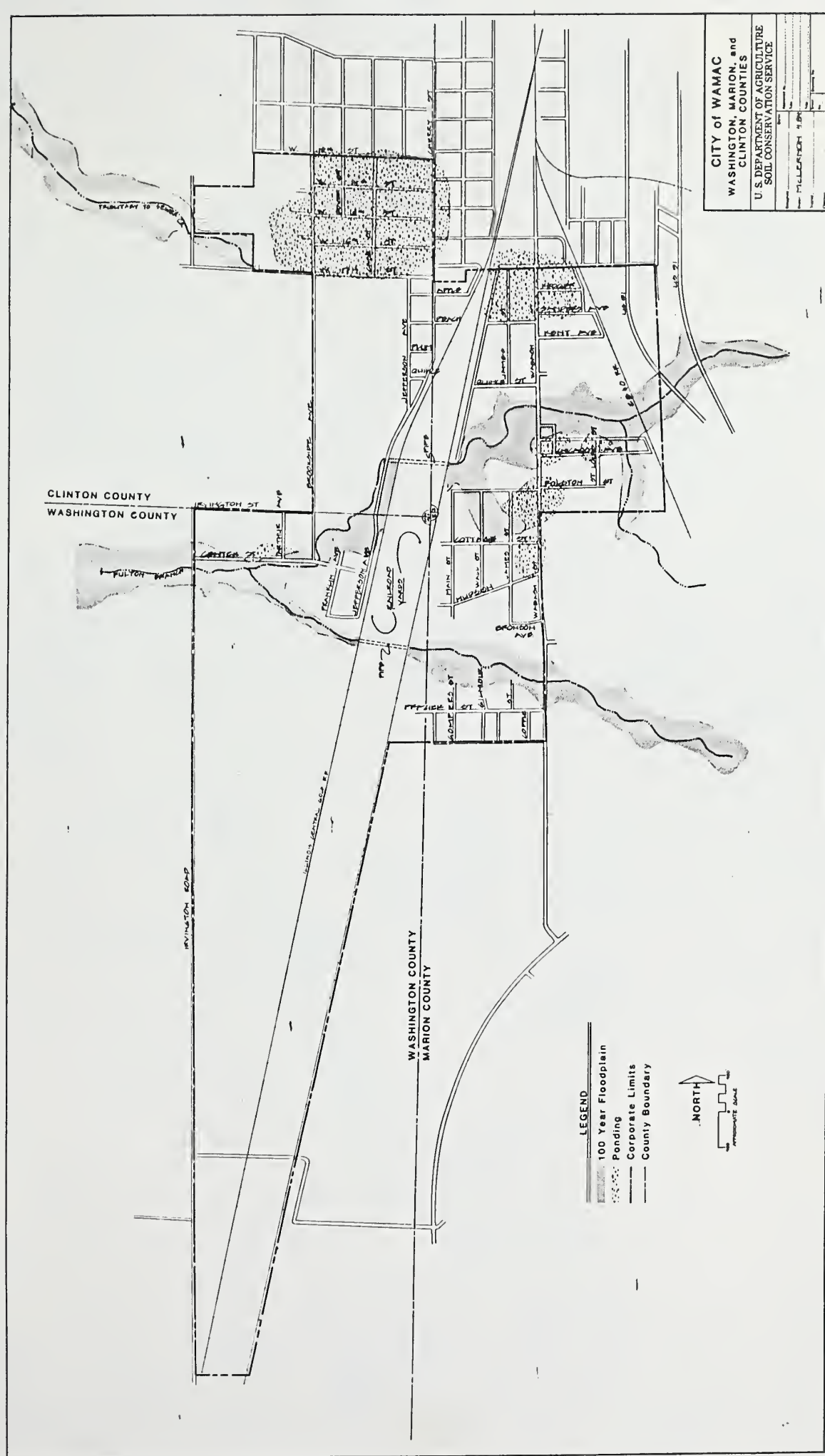




VICINITY MAP  
WAMAC  
WASHINGTON, MARION,  
AND CLINTON CO., IL.  
SCALE - 1" = 12 MILES











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